

R E M A R K S

Careful review and examination of the subject application are noted and appreciated.

SUPPORT FOR CLAIM AMENDMENTS

Support for the amendments to the claims can be found in the specification, for example, on page 7 lines 15-21, page 9 lines 4-9, page 10 lines 10-20, page 11 lines 3-8, page 13 lines 12-14, page 18 line 18 thru page 19 line 2, and FIGS. 1, 2A and 2B as originally filed. As such, no new matter has been added.

CLAIM REJECTIONS UNDER 35 U.S.C. §112

The rejection of claim 8 under 35 U.S.C. §112, second paragraph has been obviated by appropriate amendment and should be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

The rejection of claims 1-17 and 20 under 35 U.S.C. §103(a) as being obvious over Foster et al. '640 (hereinafter Foster) in view of Ishikawa et al. '078 (hereafter Ishikawa) has been obviated in part by appropriate amendment and is respectfully traversed in part and thus should be withdrawn.

The rejection of claims 18 and 19 under 35 U.S.C. §103(a) as being obvious over Foster in view of Ishikawa and Curtis '068 is respectfully traversed and should be withdrawn.

Foster teaches a method for producing titanium-containing thin films by low temperature plasma-enhanced chemical vapor deposition using a rotating susceptor reactor (Title). Ishikawa teaches a gas distribution system for a CVD processing chamber (Title). Curtis teaches a method for end point detection in a plasma etching process (Title). Foster, Ishikawa and Curtis, alone or in combination, do not appear to teach or suggest every element as presently claimed. As such, the claimed invention is fully patentable over the cited reference and the rejections should be withdrawn.

Claim 1 provides a one-piece outer portion consisting of an electrically insulative material and having dimensions effective to prevent or inhibit plasma arcing to an electrically conductive surface of an aperture. Assuming, *arguendo*, that (i) "within cylinder 238" of Foster is similar to the claimed aperture per page 3, item 2i, line 5 of the Office Action and (ii) an isolator sleeve 271 of Foster is similar to the claimed one-piece outer portion per page 3, item 2i, line 1 of the Office Action (for which the Applicants' representative does not necessarily agree), Foster appears to be silent regarding (i) the cylinder 238 having an electrically conductive surface and (ii) the isolator sleeve 271

preventing or inhibiting plasma arching to an electrically conductive surface of the cylinder 238. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest a one-piece outer portion consisting of an electrically insulative material and having dimensions effective to prevent or inhibit plasma arcing to an electrically conductive surface of an aperture as presently claimed.

Claim 1 further provides that the aperture is through a wall of a plasma processing chamber. The cylinder 238 of Foster does not appear to extend through a wall of a chamber 220. FIG. 5 of Ishikawa appears to show that an aperture around a nozzle 302 (cited on page 9, item 2xvii, lines 8-10 of the Office Action) does not extend through a wall of a flange section 314. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest an aperture through a wall of a plasma processing chamber as presently claimed.

Claim 1 further provides a flange section configured to remain outside of the wall. In contrast, Foster appears to be silent regarding any portion of the isolator sleeve 271 remaining outside a wall. Likewise, Ishikawa appears to be silent regarding any port of the nozzle 302 remaining outside a wall. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest a flange section configured to remain outside of a wall as presently claimed.

Furthermore, the Office Action has failed to establish *prima facie* obviousness for lack of clear and particular evidence for combining the references. Page 9, item 2xvii, lines 11-17 of the Office Action states that the flange section of the nozzle 302 of Ishikawa teaches "enhance hermeticity of the process chamber as taught by Ishikawa (column 10, line 20-28)". However, column 10, lines 20-28 of Ishikawa discusses o-rings, not the flange of nozzle 302, forming a gas tight seal "to prevent gas leakage into the chamber." (Ishikawa, column 10, line 28). The argument of the Office Action that one of ordinary skill in the art would seek to enhance the hermeticity of a process chamber appears to logically conflict with the inner opening of the claimed device which intentionally opens a channel into the processing chamber. Therefore, the argument of enhanced hermeticity appears to be merely a conclusory statement. As such, the Office Action has failed to establish *prima facie* obviousness for motivation to combine the references. Claims 2-6, 8 and 9 have similar language to claim 1. As such, the claimed invention is fully patentable over the cited references and the rejection should be withdrawn.

Claim 4 further provides transmitting a signal through the device out from the plasma processing chamber. In contrast, both Foster or Ishikawa appear to be silent regarding a signal leaving a plasma processing chamber through the isolator sleeve 271 or the nozzle 302. Therefore, Foster and Ishikawa, alone or in

combination, do not appear to teach or suggest transmitting a signal through the device out from the plasma processing chamber as presently claimed. As such, claim 4 is fully patentable over the cited references and the rejection should be withdrawn.

Claim 7 provides forming a bottom of a one-piece sleeve to a plane having a non-orthogonal angle relative to an inner opening of the one-piece sleeve. In contrast, both Foster and Ishikawa appear to be silent regarding a one-piece sleeve with a non-orthogonal planer bottom. Despite the assertion on page 9, item 2xvii, lines 1-4 of the Office Action, column 18, lines 33-59 of Foster do not appear to make any references to non-orthogonal surfaces. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest forming a bottom of a one-piece sleeve to a plane having a non-orthogonal angle relative to an inner opening of the one-piece sleeve as presently claimed. As such, claim 7 is fully patentable over the cited references and the rejection should be withdrawn.

Claim 9 further provides cleaning the chamber and the device. In contrast, Foster appears to be silent regarding cleaning the chamber and the isolator sleeve 271. Despite the assertion on page 11, item 6 of the Office Action that cleaning is inherent to plasma etching, Applicants' representative has been unable to locate any section in Foster or Ishikawa than refers to plasma etching. Furthermore, the "contact cleaning" taught by

Foster in column 30, line 14 appears to be silent how the cleaning is performed. Since contacts may be conventionally cleaned by wet cleaning, plasma etching is not inherent to a contact cleaning process. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest cleaning a chamber and a device as presently claimed. The Examiner is respectfully requested to either (i) identify where Foster teaches plasma etching to clean the isolator sleeve 271 or (ii) withdraw the rejection.

Claim 10 provides that the plasma exists in the chamber for a predetermined period of time. Despite the assertion on page 8, item 2xii of the Office Action, column 3, lines 1-7 of Foster appear to be silent regarding generating a plasma in a chamber for a predetermined period of time. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest a plasma existing in a chamber for a predetermined amount of time as presently claimed. As such, claim 10 is fully patentable over the cited references and the rejection should be withdrawn.

Claim 13 provides that the device applies a predetermined amount of pressure against an inner wall of the aperture. In contrast, Foster appears to be silent that the isolator sleeve 271 applies pressure against an inner wall of an aperture. Likewise, Ishikawa appears to be silent that the nozzle 302 applies pressure against the flange section 314. Therefore, Foster and Ishikawa, alone or in combination, do not appear to teach or suggest a device

applying a predetermined amount of pressure against an inner wall of an aperture as presently claimed. As such, claim 13 is fully patentable over the cited references and the rejection should be withdrawn.

Claim 18 provides that the inner opening transfers a spectroscopic endpoint detection signal. The Office Action has failed to establish *prima facie* obviousness for lack of clear and particular evidence of motivation to combine the references. In particular, page 10, lines 11-13 of the Office Action argue that motivation exists "for determining the end point of the plasma etching process". In contrast, the title of Foster indicates that the plasma is used for enhancing chemical vapor deposition of thin films of titanium. Foster appears to be silent regarding a plasma etch. Therefore, one or ordinary skill in the art would have no apparent motivation to add a plasma endpoint detection capability to the chamber of Foster which does not appear to perform any plasma etching.

Furthermore, the proposed modification of the isolator sleeve 271 of Foster per Curtis would appear to conflict with the principle of operation of the isolator sleeve 271 and is, therefore, not a proper basis for a conclusion of obviousness (See MPEP §2143.01). The principle of operation for the isolator sleeve 271 of Foster appears to be isolating an RF line 256 from reactant gasses (See Foster, column 15, lines 29-33 for a discussion of a

similar isolator 154). Modifying the isolator sleeve 271 of Foster to operate as a light pipe, as taught by Curtis, appears to be incompatible with isolating the RF line 256. Nothing in the Office Action, Foster, Ishikawa or Curtis provides an apparent explanation of how to modify the isolator sleeve 271 to transmit light emitted from the plasma with the RF line 256 still in place and thus blocking the light. If the RF line 256 is removed to permit the light to pass, the isolator sleeve 271 no longer performs the operation of isolating the RF line 256. As such, the motivation asserted by the Office Action appears to alter the principle of operation of Foster and thus the combination does not appear to be appropriate. Claims 11 and 19 provide for language similar to claim 18. Therefore, claims 11, 18 and 19 are fully patentable over the cited references and the rejection should be withdrawn.

Accordingly, the present application is in condition for allowance. Early and favorable action by the Examiner is respectfully solicited.

The Examiner is respectfully invited to call the Applicants' representative should it be deemed beneficial to further advance prosecution of the application.

If any additional fees are due, please charge our office
Account No. 50-0541.

Respectfully submitted,

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